

U.S. Patent Application Serial No. 09/976,278
Amendment dated July 28, 2004
Reply to OA of **March 4, 2004**

REMARKS

Claims 1 and 5, 6, 8, 10 and 12-14 are currently pending in this application. Claims 7, 9 and 11 have been cancelled without prejudice or disclaimer. Claims 1 and 12 have been amended. It is believed that this Amendment is fully responsive to the Office Action dated **March 4, 2004**.

Applicants submit that no new matter is added by this amendment. The amendment to claim 1 incorporates the limitations of claims 7, 9, and 11, which are correspondingly cancelled. Support for the recitation that the photoacid generator (B) is a sulfonic ester and/or a sulfonic acid imide ester may be found in the specification on page 15, line 24. Support for the amendment to claim 12 may also be found in now cancelled claim 11.

Claims 1 and 5-13 are rejected under 35 U.S.C. §103(a) as being unpatentable over Bantu et al. (U.S. 6,072,006) in view of Urano et al. (U.S. 6,033,826 A) and Makoto et al. (JP 09-138502 A, machine translation). (Office action paragraphs no. 4-7)

The rejection of pending claims 1, 5, 6, 8, 10, 12 and 13 is overcome by the amendment to claim 1. Specifically, claim 1, as amended, recites that the claimed photosensitive resin composition is an aqueous photosensitive resin composition. Amended claim 1 also recites that photoacid generator (B) is a sulfonic acid ester and/or a sulfonic acid imide ester, photosensitizer (C) is represented by formula (1), that the claimed composition comprises photoacid proliferating component (D) which is an organic acid ester.

It is essential to the present invention to use in combination: (A) a specific positive

photosensitive resin component, (B) a specific photoacid generator, (C) a specific photosensitizer, and (D) a specific photoacid proliferating agent, in the aqueous positive photosensitive resin composition and the dry film prepared therefrom.

The resin composition and the dry film of the invention have high sensitivity to visible light with a wavelength of 480 nm or more. The use thereof provides a remarkable effect, i.e., formation of sharp patterns.

This remarkable effect can be evidenced by, for example, aqueous positive photosensitive resin composition II of Example 2 (pages 44-46 of specification), which contains cis-3-(p-toluenesulfonyloxy)-2-pinanol as the organic acid ester and clearly forms a resist pattern coating with a stripe-shaped pattern of line/space = 100 μm /20 μm as shown in Example 8 (pages 48-49 of specification).

Bantu et al. discloses a process for generating an organically soluble partially cross-linked acid labile polymer comprising the step of reacting a polymer containing a pendant COOH or hydroxyl group with a polyvinyl ether, and the use of the resulting polymer as a component in a photoresist formulation (Abstract). Moreover, an organic-solvent-based photoresist composition is disclosed (column 11, lines 39-58) .

Urano et al. discloses that phenolic compounds, ultraviolet absorbents, sensitivity adjusting agents, plasticizers, photosensitizers, organic acids, surfactants, etc., can be used as additives to the resist material (column 22, lines 33-39) .

Makoto et al. discloses a photocopolymerizable composition comprising as a photosensitizer

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a benzopyran ring condensation compound that shows photosensitization ability to light with a wavelength of 500 nm or more. Specific examples of such a benzopyran ring condensation compound include a compound similar to the benzopyran condensed ring compound recited in claim 1 of the present application.

However, when compared with the aqueous positive photosensitive resin composition recited in currently amended claim 1 and the dry film thereof recited in claim 12 of the present specification, the photoresist composition of Bantu et al. is an **organic-solvent-based** composition and is greatly different from the present invention, which is **aqueous**.

Moreover, Bantu et al., Urano et al. and Makoto et al. **neither teach nor suggest photoacid proliferating agents**.

Therefore, none of the references discloses or suggests a combination of (A) a specific positive photosensitive resin component, (B) a specific photoacid generator, (C) a specific photosensitizer, and (D) a specific photoacid proliferating agent, as recited in claim 1. Moreover, accordingly, none of the references suggests the remarkable effect obtainable from the present invention.

Applicants therefore submit that pending claims 1, 5, 6, 8, 10, 12 and 13 are novel and non-obvious over Bantu et al., Urano et al., and Makoto et al., taken separately or in combination.

Claim 14 is rejected under 35 U.S.C. §103(a) as being unpatentable over Bantu et al.

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(U.S. 6,072,006) in view of Urano et al. (U.S. 6,033,826) and Makoto et al. (JP 09-138502A, machine translation) and further in view of Imai et al. (US 5496678). (Office action paragraphs no. 8-9)

The rejection is overcome by the amendments to claims 1 and 12. Applicants have argued above that base claims 1 and 12, as amended, are novel and non-obvious over the combination of Bantu et al., Urano et al. and Makoto et al.

In the rejection, the Examiner indicates that the combination of Bantu et al., Urano et al. and Makoto et al. teaches the limitations of claim 14 except for teaching peeling off the support film to form a resist pattern. However, Applicants submit that the combination of Bantu et al., Urano et al. and Makoto et al. fails to disclose or suggest the combination of (A) a specific positive photosensitive resin component, (B) a specific photoacid generator, (C) a specific photosensitizer, and (D) a specific photoacid proliferating agent, of amended claim 1, from which claim 14 ultimately depends. Applicants submit that the further combination with Imai et al. does not provide a disclosure or suggestion for this combination of limitations.

Applicants therefore submit that claim 14 is novel and non-obvious over Bantu et al., Urano et al., Makoto et al., and Imai et al., taken separately or in combination

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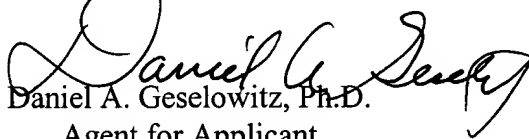
In view of the aforementioned amendments and accompanying remarks, claims, as amended, are in condition for allowance, which action, at an early date, is requested.

If, for any reason, it is felt that this application is not now in condition for allowance, the Examiner is requested to contact Applicant's undersigned agent at the telephone number indicated below to arrange for an interview to expedite the disposition of this case.

In the event that this paper is not timely filed, Applicant respectfully petitions for an appropriate extension of time. Please charge any fees for such an extension of time and any other fees which may be due with respect to this paper, to Deposit Account No. 01-2340.

Respectfully submitted,

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PATENT TRADEMARK OFFICE

Enclosure: Petition for Extension of Time

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